

pump, or is not equipped with a mixture pump, the mixture flow rate is reduced to one-half of the meter's design flow rate. The reduced flow rate or mixture pressure is maintained until a steady oil content reading is obtained and recorded.

(3) If the meter has a positive displacement mixture pump, the mixture pressure is increased to twice the meter's design pressure. If the meter has a centrifugal mixture pump or does not have a mixture pump, the mixture flow rate is increased to twice the meter's maximum design flow rate. The increased flow rate or mixture pressure is maintained until a steady oil content reading is obtained and recorded.

(k) *Test No. 10 Shutoff Test.* (1) The steps described in paragraph (h)(1) of this section are repeated.

(2) The water and metering pumps on the test rig are stopped for 8 hours after which the steps described in paragraph (h)(1) of this section are repeated.

(1) *Test No. 11 Supply Voltage Variation Test.* (1) The supply voltage to the meter is increased to 110 percent of its design supply voltage. The meter is then fed a 100 ppm mixture for one hour. At the end of the 1-hour period, an oil content reading is obtained and recorded.

(2) The steps described in paragraph (1)(1) of this section are repeated with the supply voltage to the meter lowered to 90 percent of its design supply voltage.

(3) Upon completing the steps described in paragraph (1)(2) of this section, the supply voltage to the meter is returned to the design rating.

(4) The steps described in paragraphs (1)(1) through (1)(3) of this section are repeated varying each power supply to the meter in the manner prescribed in those steps for supply voltage.

(m) *Test No. 12 Calibration and Zero Drift Test.* (1) The meter is calibrated and zeroed.

(2) The steps described in paragraph (h)(1) of this section are repeated.

(3) A 100 ppm mixture is fed to the meter for 8 hours. At the end of the 8-hour period, an oil content reading is obtained and recorded.

(4) The meter is fed with water until a steady oil content reading is obtained and recorded.

(n) *Test No. 13 Shutdown and Restart Test.* (1) All power to the meter is shut-off for one week. After 1 week the meter is restarted, zeroed, and calibrated.

(2) The meter is fed with a 100 ppm mixture for 1 hour. An oil content reading is then obtained and recorded.

(3) The meter is fed with water for 1 hour. An oil content reading is then obtained and recorded.

(4) The steps described in paragraphs (n)(2) and (n)(3) of this section are repeated three additional times. During the last hour in which the meter is fed with a 100 ppm mixture, the meter is inclined at an angle of 22.5° with the plane of its normal operating position.

[USCG-2004-18939, 74 FR 3389, Jan. 16, 2009]

§ 162.050-33 Bilge alarm: Design specification.

(a) This section contains requirements that apply to bilge alarms.

(b) Each bilge alarm must be designed to meet the requirements for an oil content meter in § 162.050-25(b) through (f) and 162.050-25(i), and the requirements in this section.

(c) Each bilge alarm must have a device that produces a warning signal, and a signal that can be used to actuate stop valves in a vessel's fixed piping system, when—

(1) the oil content of the mixture being measured by the bilge alarm exceeds 15 ppm \pm 5 ppm, and

(2) malfunction, breakdown, or other failure of the bilge alarm occurs.

(d) Each bilge alarm must have a ppm display. Emulsions and/or the type of oil must not affect the ppm display. Calibrating the bilge alarm must not be necessary once installed on board the vessel, however, onboard testing in accordance with the manufacturer's operating instructions is permitted for the purposes of checking instrument drift and repeatability of the instrument reading, as well as the ability to re-zero the instrument. The accuracy of the readings must at all times remain within the limits described in paragraph (c)(1) of this section.

(e) Each bilge alarm must be designed so that it displays each change

in oil content of the mixture it is measuring within 5 seconds after the change occurs.

(f) Access to the bilge alarm must require the breaking of a seal, except when—

- (1) Re-zeroing the instrument;
- (2) Checking the instrument drift; or
- (3) Checking the repeatability of the instrument reading.

(g) Each bilge alarm must activate its alarm whenever clean water is used for cleaning or zeroing purposes.

(h) The bilge alarm must record date, time, alarm status, and operating status of the 15 ppm bilge separator. The recording device must also store data for at least 18 months and be able to display or print a protocol. In the event the 15 ppm bilge alarm is replaced, means must be provided to ensure the data recorded remains available on board for 18 months.

[CGD 76-088a, 44 FR 53359, Sept. 13, 1979, as amended by USCG-2004-18939, 74 FR 3391, Jan. 16, 2009]

§ 162.050-35 Bilge alarm: Approval tests.

This section contains requirements that apply to bilge alarms.

(a) *Test Conditions.* (1) Each test must be conducted under the conditions prescribed for meters in § 162.050-27(a)(1) through (a)(5), (a)(7), (a)(8), (a)(10), (a)(11), and (a)(13).

(2) The tests in this section must be performed using test fluids described in § 162.050-20.

(3) The oil content of each sample must be measured using the method described in § 162.050-39.

(b) *Test No. 1A Calibration and Zero Test.* (1) The bilge alarm is calibrated and zeroed to manufacturer's instructions.

(2) It is then fed with water for 15 minutes and then with a mixture of Test Fluid A and water in the following concentrations: 0 ppm, 15 ppm, and the highest oil concentration that can be read on the monitor. A sample of the mixture causing actuation of the alarm is taken. The alarm is then fed with water for 15 minutes.

(3) Repeat steps in paragraphs (b)(2) of this section first using Test Fluid B and then again with Test Fluid C. Collect samples as required in the test for

each run of Test Fluid B and Test Fluid C.

(4) If the bilge alarm must be calibrated and re-zeroed between test fluids, this must be noted in the test report.

(c) *Test No. 2A Contaminant Test.* (1) The bilge alarm is fed for 5 minutes with a 10 ppm mixture of Test Fluid B and water. At the end of the 5-minute period an oil content reading is obtained and recorded.

(2) The bilge alarm is then fed for 5 minutes with a 10 ppm mixture of Test Fluid B and water contaminated with a 10 ppm concentration of iron oxide. Any change in the bilge alarm reading during the 5 minutes is recorded.

(3) Repeat steps in paragraphs (c)(1) and (2) of this section using iron oxide concentrations of 50 ppm and 100 ppm.

(4) The bilge alarm is then fed for 5 minutes with a 10 ppm mixture of Test Fluid B and water. At the end of the 5-minute period an oil content reading is obtained and recorded.

(5) The bilge alarm is fed for 5 minutes with a 10 ppm mixture of Test Fluid B and fresh water with 6 percent sodium chloride. Any change in the bilge alarm reading is recorded.

(d) *Test No. 3A Sample Pressure or Flow Test.* (1) The bilge alarm is fed with a mixture of Test Fluid B and water and the test fluid content of the mixture is increased until the bilge alarm actuates. The ppm display is recorded and a sample of the mixture causing actuation of the alarm is taken.

(2) If the alarm has a positive displacement mixture pump, the mixture pressure is reduced to one-half of the alarm's maximum design pressure. If the alarm has a centrifugal mixture pump or is not equipped with a mixture pump, the mixture flow rate is reduced to one-half of the alarm's maximum design flow rate. After reduction of pressure or flow rate, the oil content in the mixture is increased until the alarm actuates. The ppm display is recorded and a sample of the mixture causing actuation of the alarm is taken.

(3) If the alarm has a positive displacement mixture pump, the influent pressure is increased to twice the alarm's minimum design pressure. If the alarm has a centrifugal mixture